FIG. 1

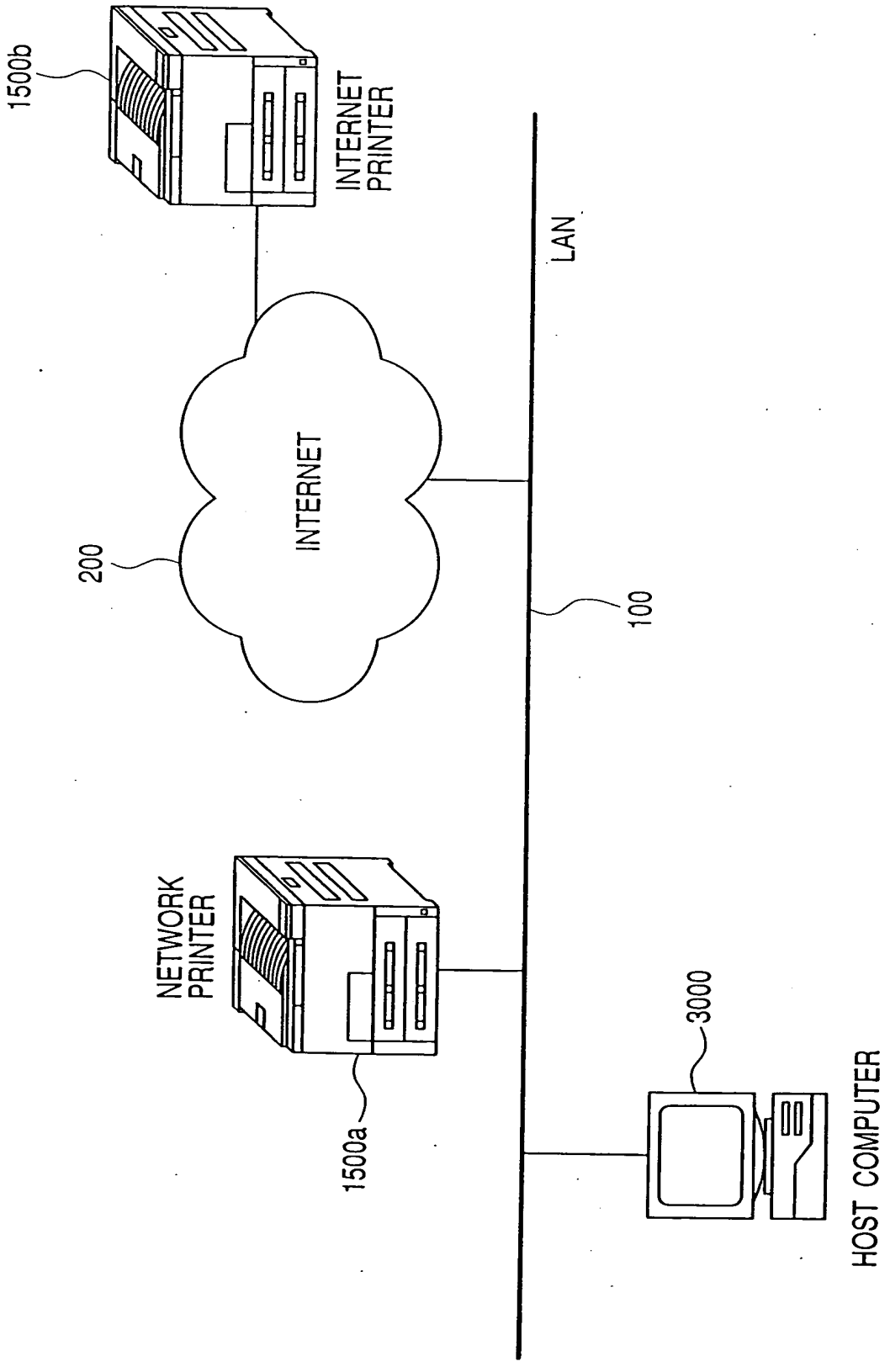

1500b
INTERNET PRINTER
LAN
INTERNET
200
100
NETWORK PRINTER
1500a
3000
HOST COMPUTER

FIG. 2

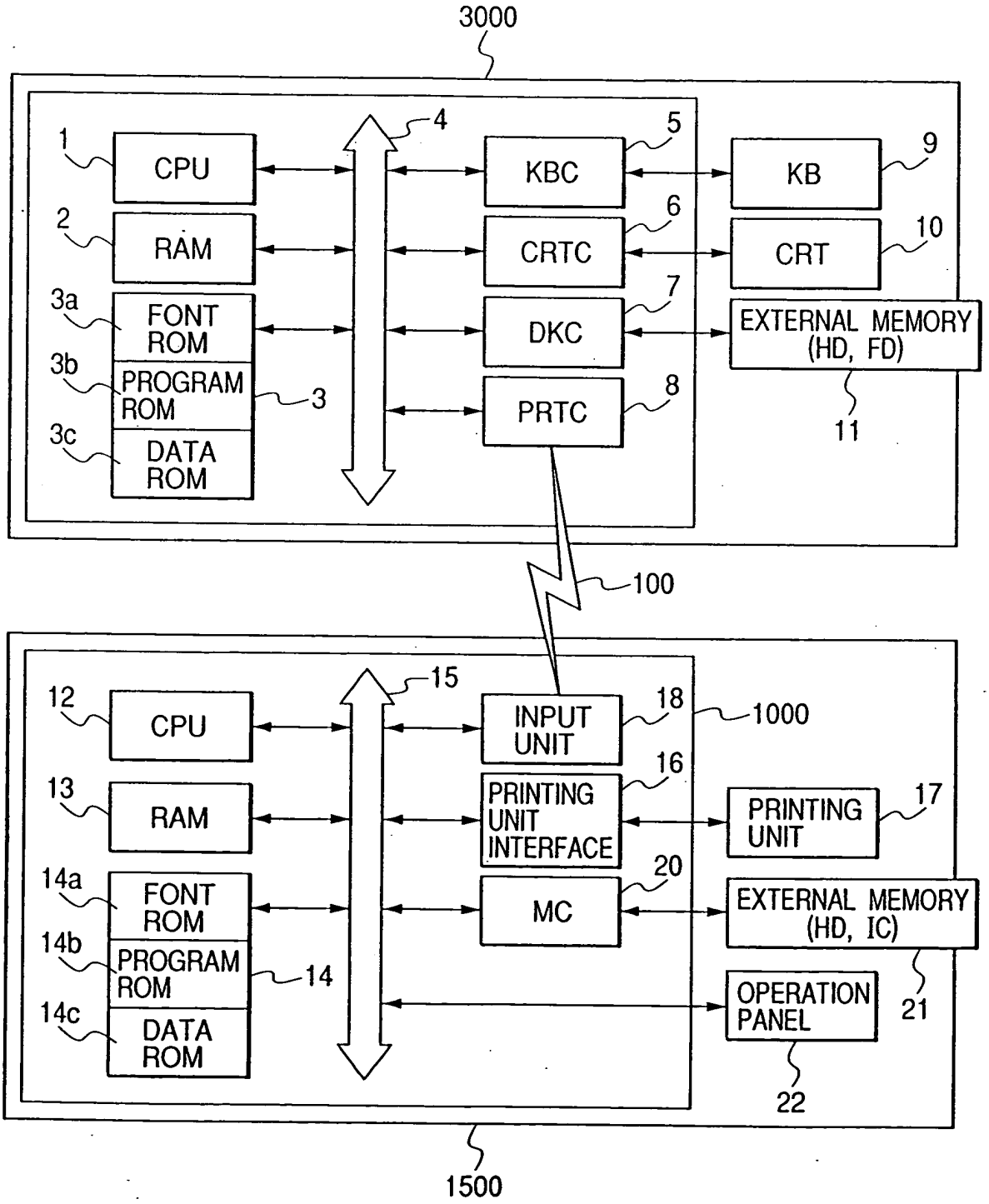

3000
1
CPU
2
RAM
3a
FONT ROM
3b
PROGRAM ROM
3c
DATA ROM
3
4
5
KBC
6
CRTC
7
DKC
8
PRTC
9
KB
10
CRT
EXTERNAL MEMORY (HD, FD)
11
100
12
CPU
13
RAM
14a
FONT ROM
14b
PROGRAM ROM
14c
DATA ROM
14
15
INPUT UNIT
18
1000
16
PRINTING UNIT INTERFACE
20
MC
PRINTING UNIT
17
EXTERNAL MEMORY (HD, IC)
21
OPERATION PANEL
22
1500

FIG. 3A

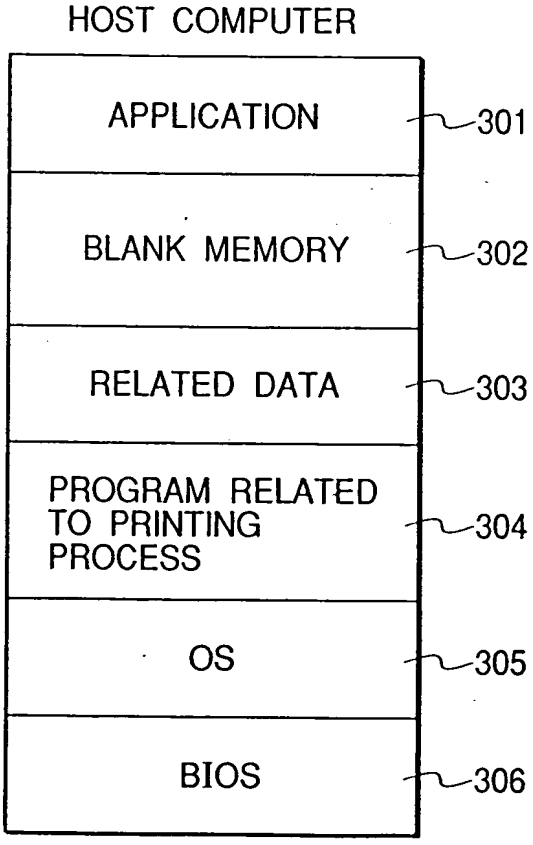

HOST COMPUTER
APPLICATION
301
BLANK MEMORY
302
RELATED DATA
303
PROGRAM RELATED TO PRINTING PROCESS
304
OS
305
BIOS
306

FIG. 3B

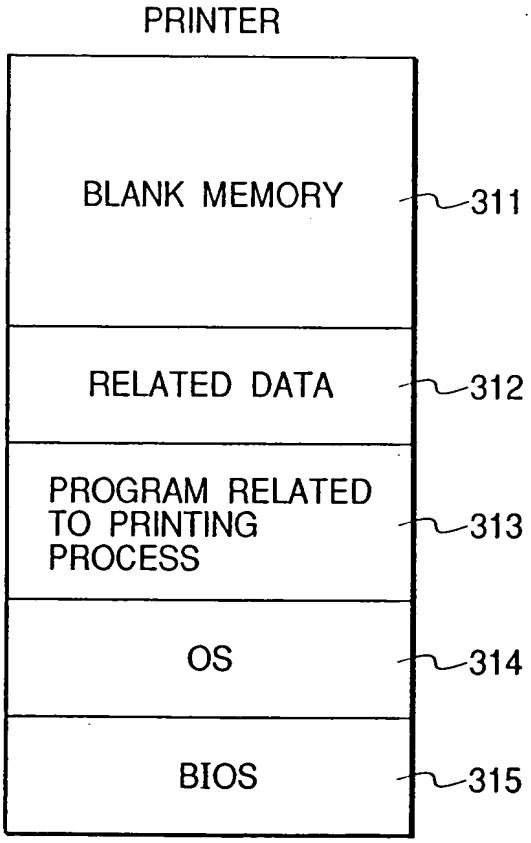

PRINTER
BLANK MEMORY
311
RELATED DATA
312
PROGRAM RELATED TO PRINTING PROCESS
313
OS
314
BIOS
315

FIG. 4

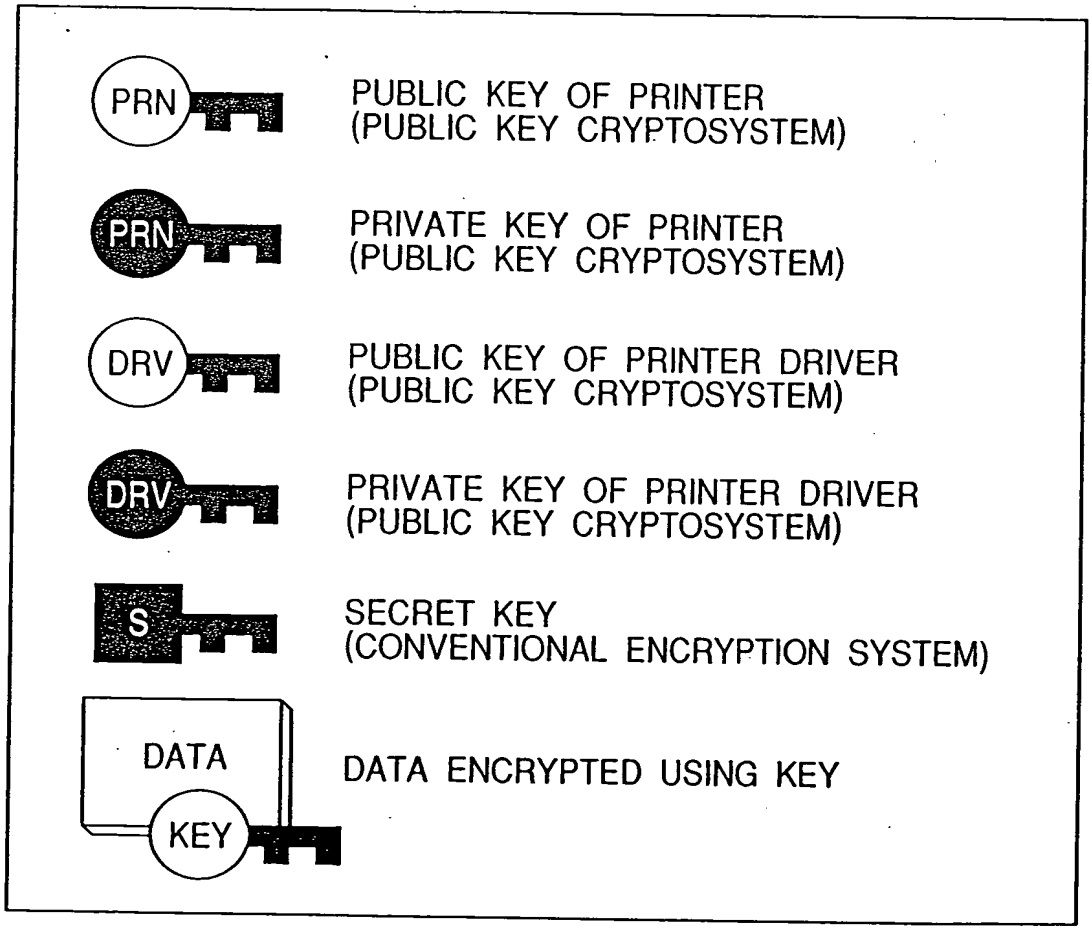

PRN
PUBLIC KEY OF PRINTER
(PUBLIC KEY CRYPTOSYSTEM)
PRN
PRIVATE KEY OF PRINTER
(PUBLIC KEY CRYPTOSYSTEM)
DRV
PUBLIC KEY OF PRINTER DRIVER
(PUBLIC KEY CRYPTOSYSTEM)
DRV
PRIVATE KEY OF PRINTER DRIVER
(PUBLIC KEY CRYPTOSYSTEM)
S
SECRET KEY
(CONVENTIONAL ENCRYPTION SYSTEM)
DATA
KEY
DATA ENCRYPTED USING KEY

FIG. 5

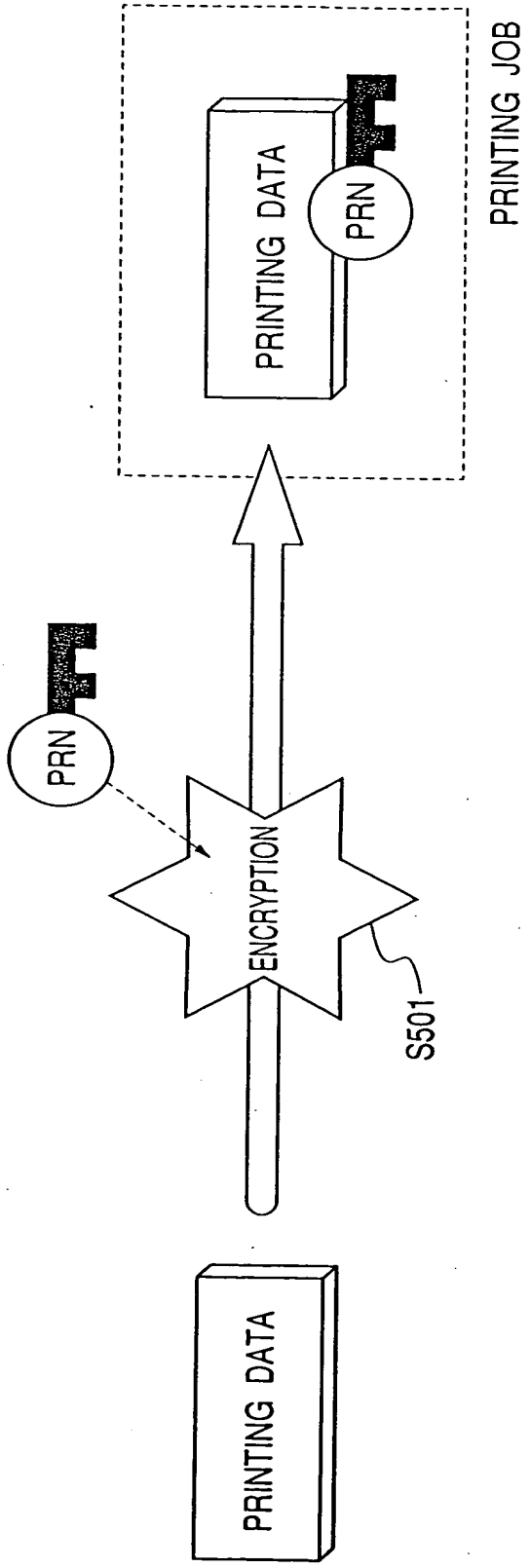

PRINTING JOB
PRINTING DATA
PRN
PRN
ENCRYPTION
S501
PRINTING DATA
PROCESS OF THE PRINTER DRIVER

FIG. 6

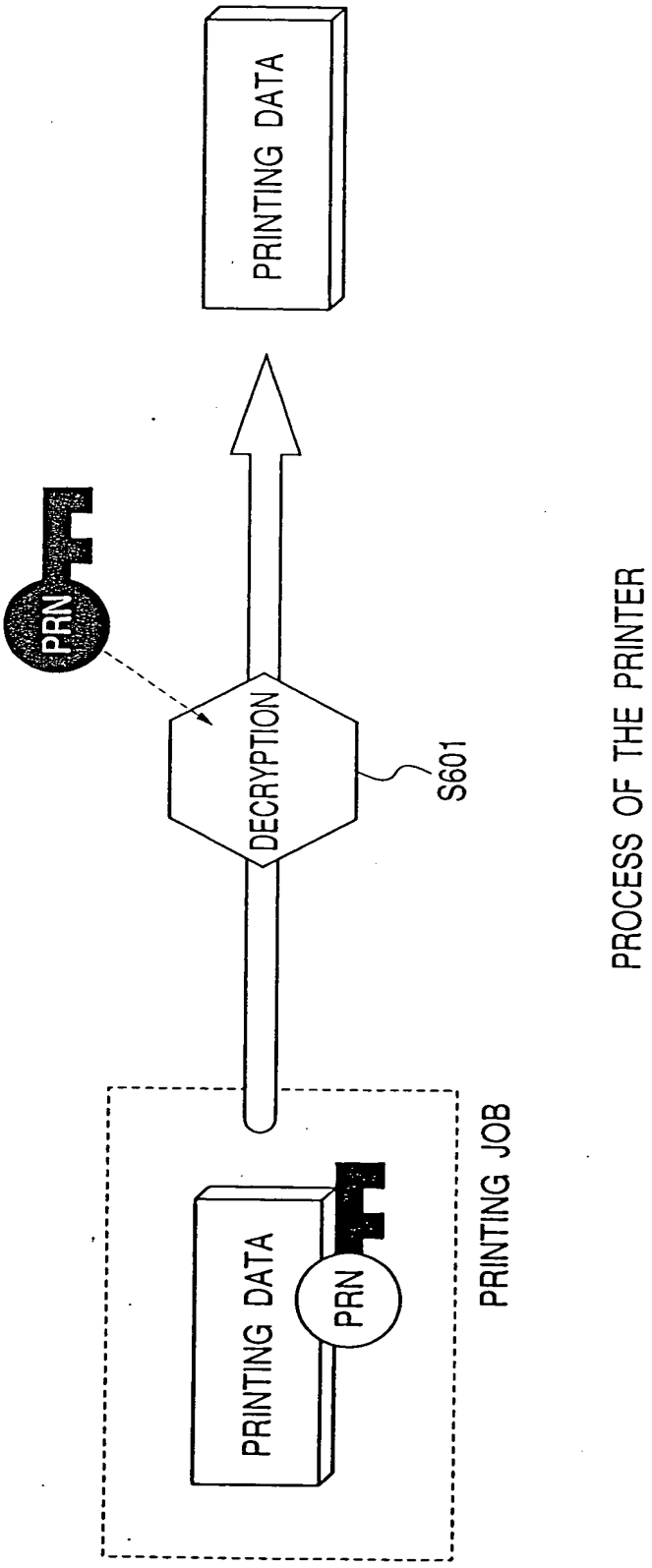
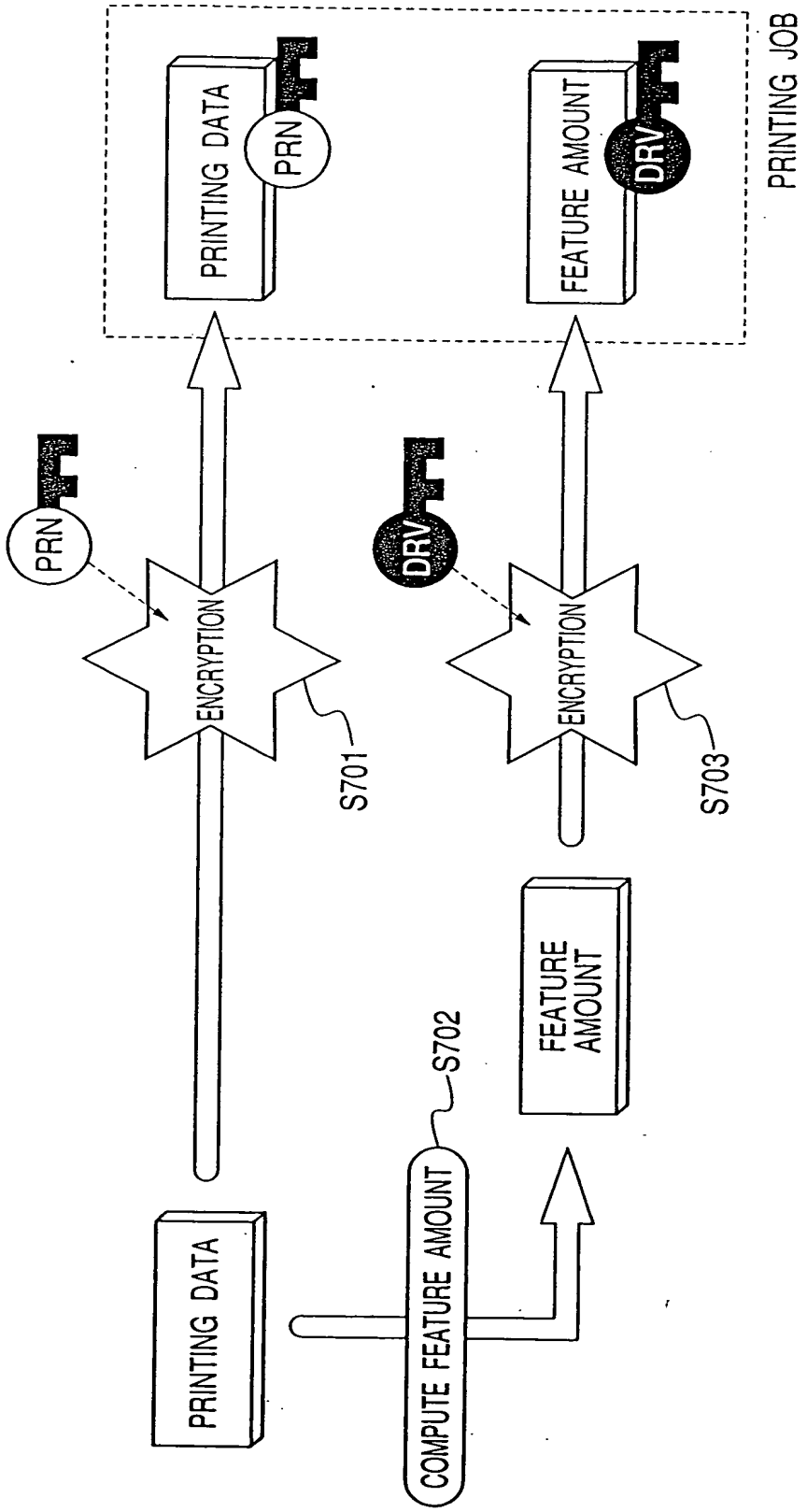

PRINTING DATA
PRN
DECRYPTION
S601
PRINTING DATA
PRN
PRINTING JOB
PROCESS OF THE PRINTER

FIG. 7



PROCESS OF THE PRINTER DRIVER

FIG. 8

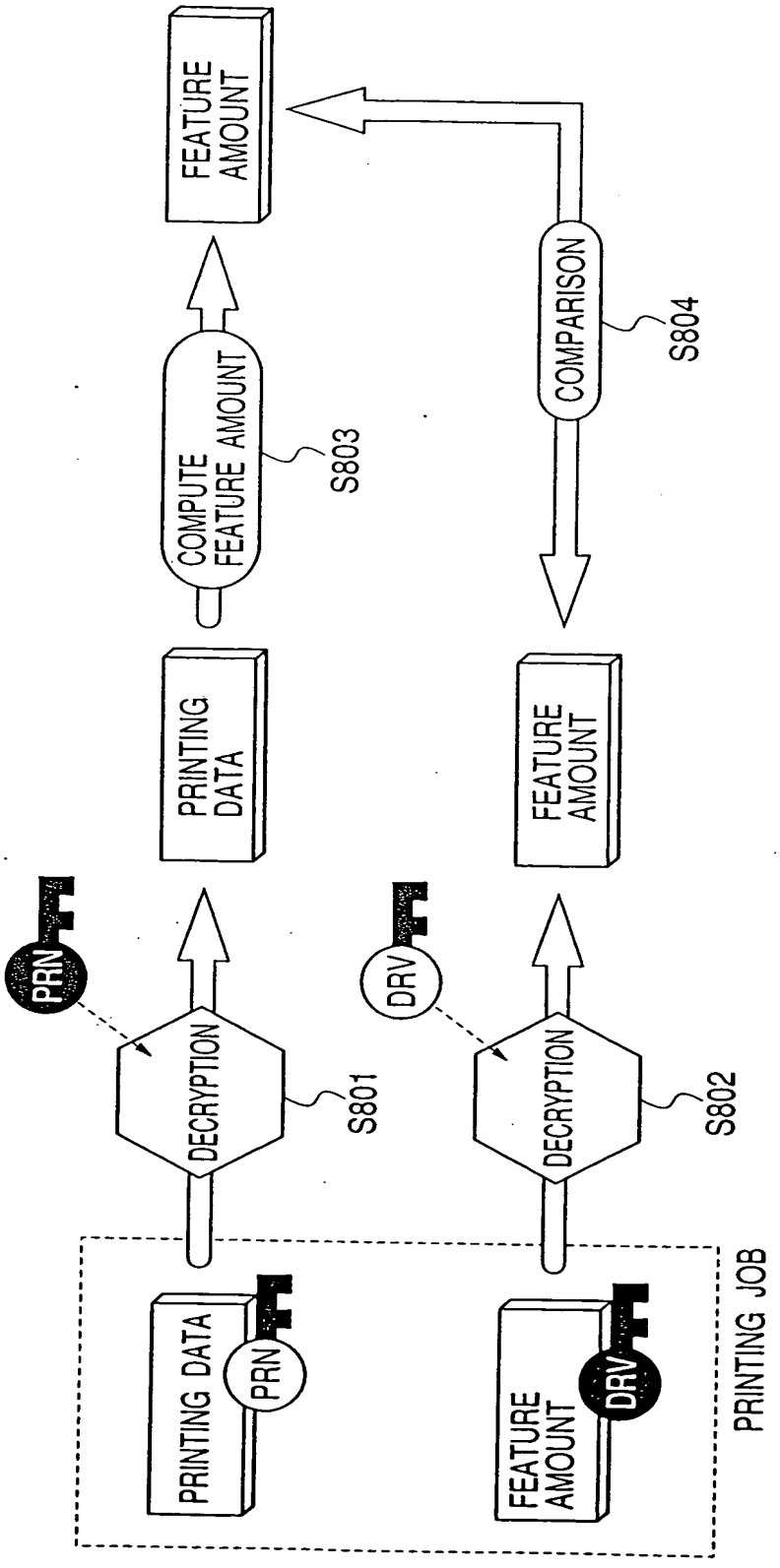

PRINTING JOB
PRINTING DATA
PRN
FEATURE AMOUNT
DRV
PRN
DRV
DECRYPTION
S801
DECRYPTION
S802
PRINTING DATA
FEATURE AMOUNT
COMPUTE FEATURE AMOUNT
S803
COMPARISON
S804
FEATURE AMOUNT
PROCESS OF THE PRINTER

FIG. 9

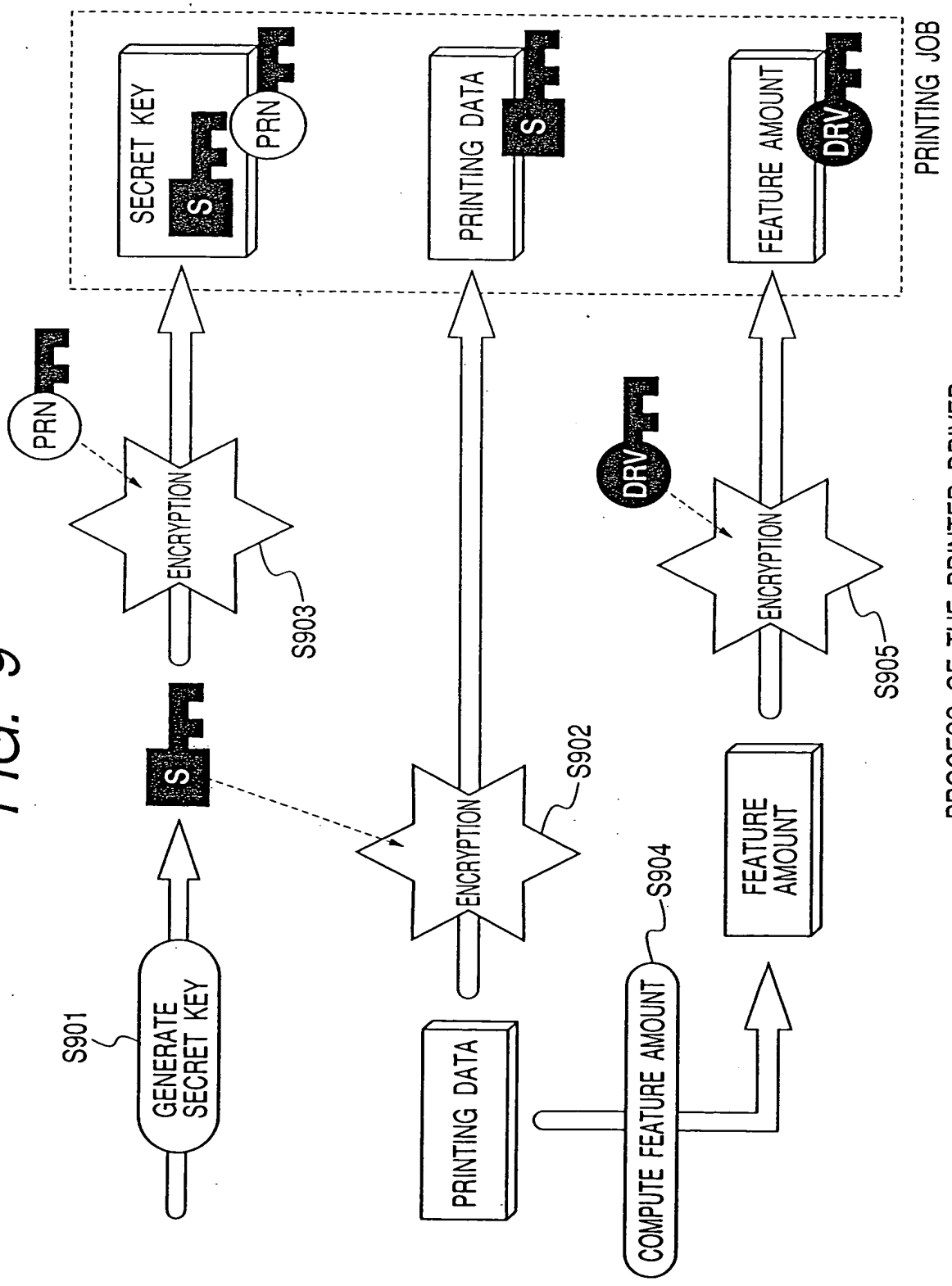

PROCESS OF THE PRINTER DRIVER
PRINTING JOB
SECRET KEY
PRINTING DATA
FEATURE AMOUNT
PRN
DRV
S
ENCRYPTION
S901
GENERATE SECRET KEY
S902
S903
S904
S905
COMPUTE FEATURE AMOUNT

FIG. 10

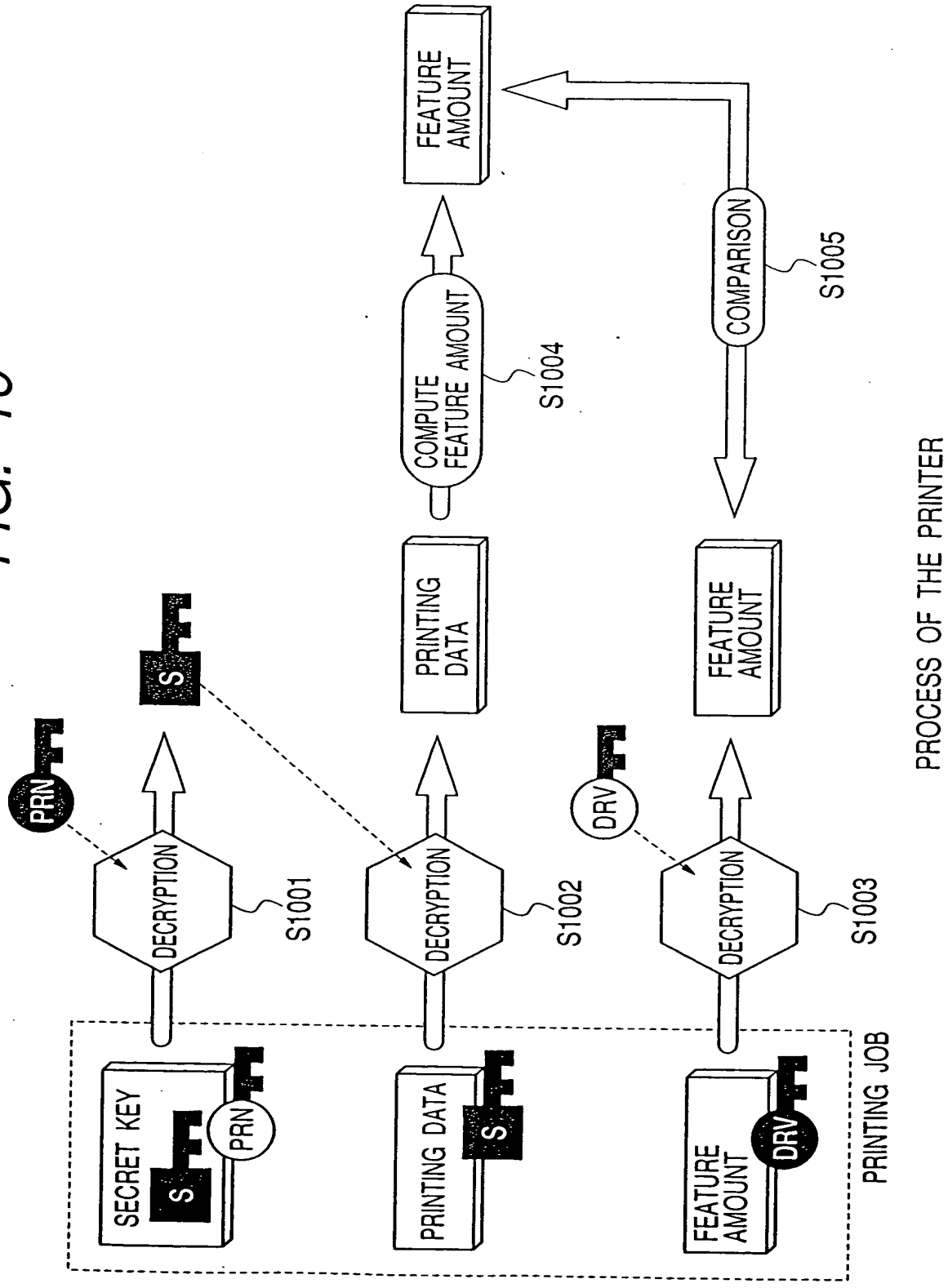

PRINTING JOB
SECRET KEY
S
PRN
PRINTING DATA
S
FEATURE AMOUNT
DRV
PRN
DRV
S
DECRYPTION
S1001
DECRYPTION
S1002
DECRYPTION
S1003
PRINTING DATA
COMPUTE FEATURE AMOUNT
S1004
FEATURE AMOUNT
COMPARISON
S1005
PROCESS OF THE PRINTER

FIG. 11

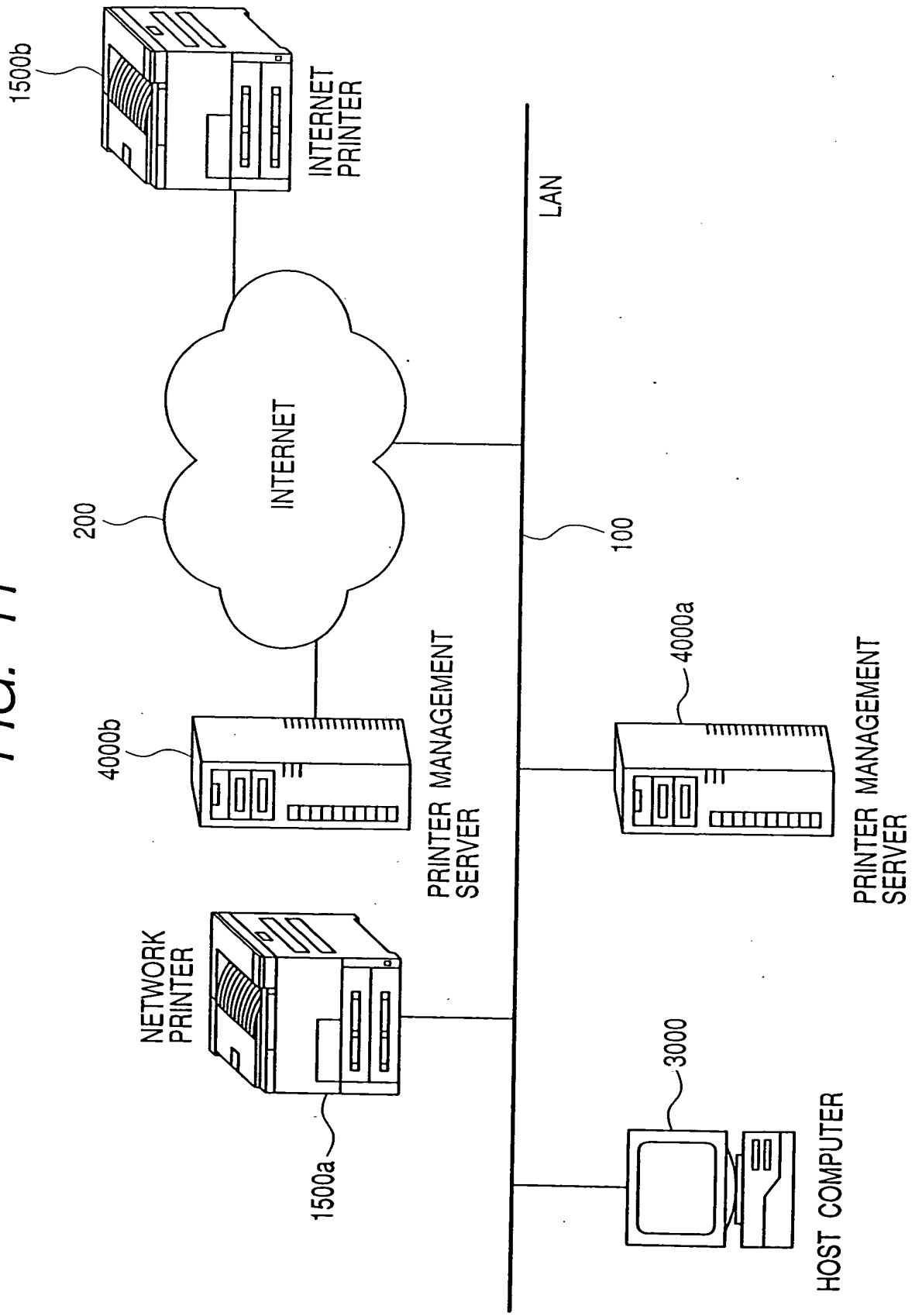

1500b
INTERNET PRINTER
LAN
INTERNET
200
100
4000b
PRINTER MANAGEMENT SERVER
4000a
PRINTER MANAGEMENT SERVER
NETWORK PRINTER
1500a
3000
HOST COMPUTER

FIG. 12

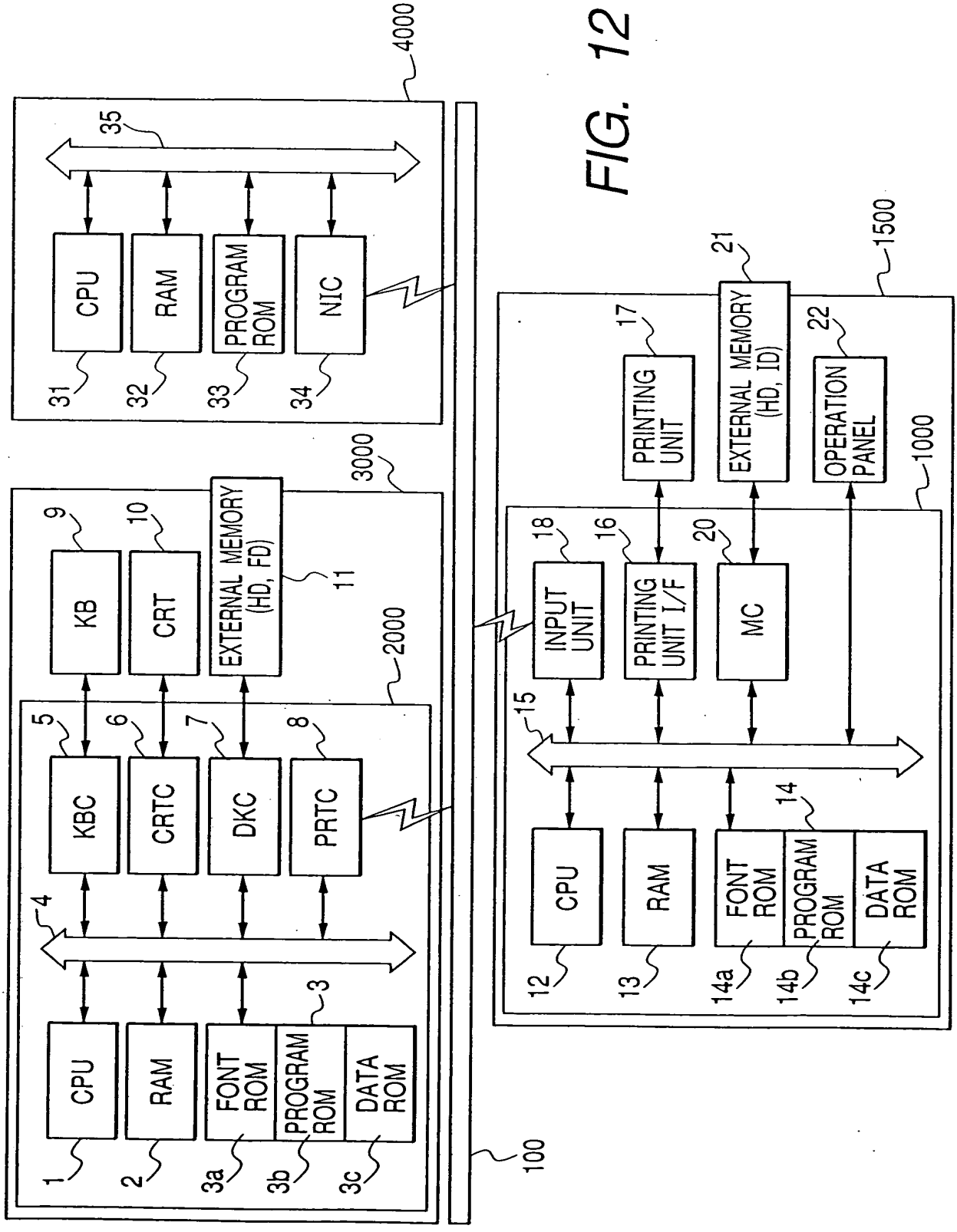

4000
35
CPU
RAM
PROGRAM ROM
NIC
31
32
33
34
3000
9
10
KB
CRT
EXTERNAL MEMORY (HD, FD)
11
2000
5
6
7
8
KBC
CRTC
DKC
PRTC
4
CPU
RAM
FONT ROM
PROGRAM ROM
DATA ROM
3
1
2
3a
3b
3c
100
1500
21
17
22
PRINTING UNIT
EXTERNAL MEMORY (HD, ID)
OPERATION PANEL
1000
18
16
20
INPUT UNIT
PRINTING UNIT I/F
MC
15
CPU
RAM
FONT ROM
PROGRAM ROM
DATA ROM
14
12
13
14a
14b
14c

FIG. 13A

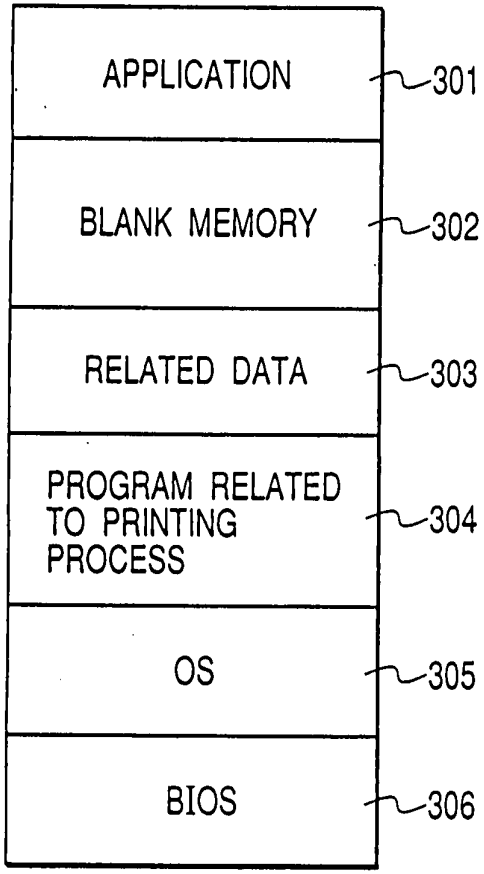


FIG. 13B

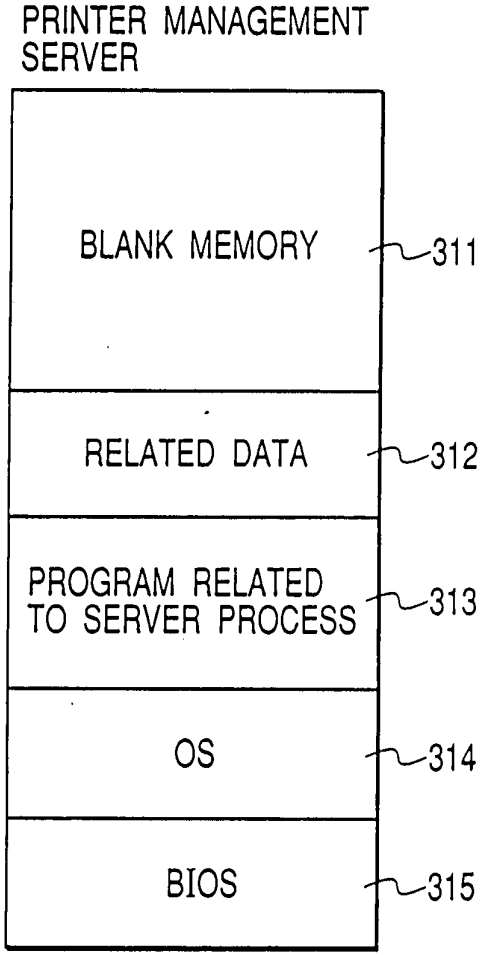
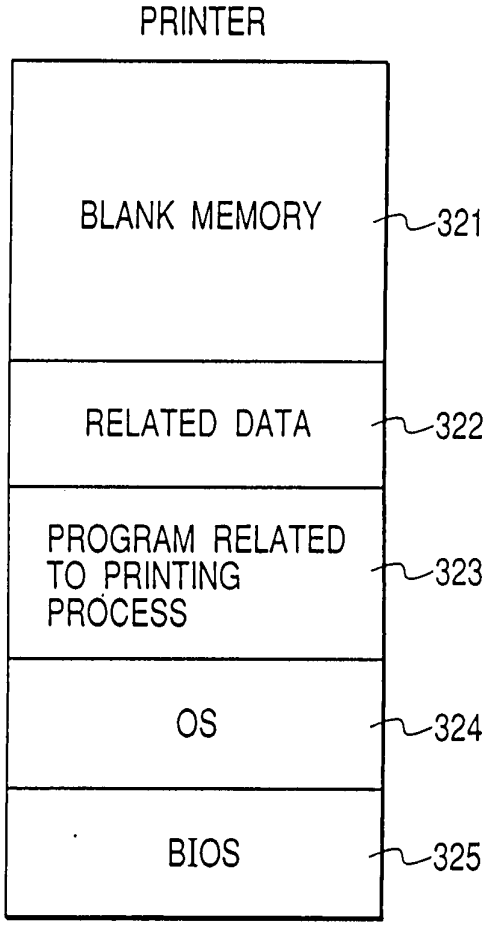


FIG. 13C



10/522605

FIG. 14

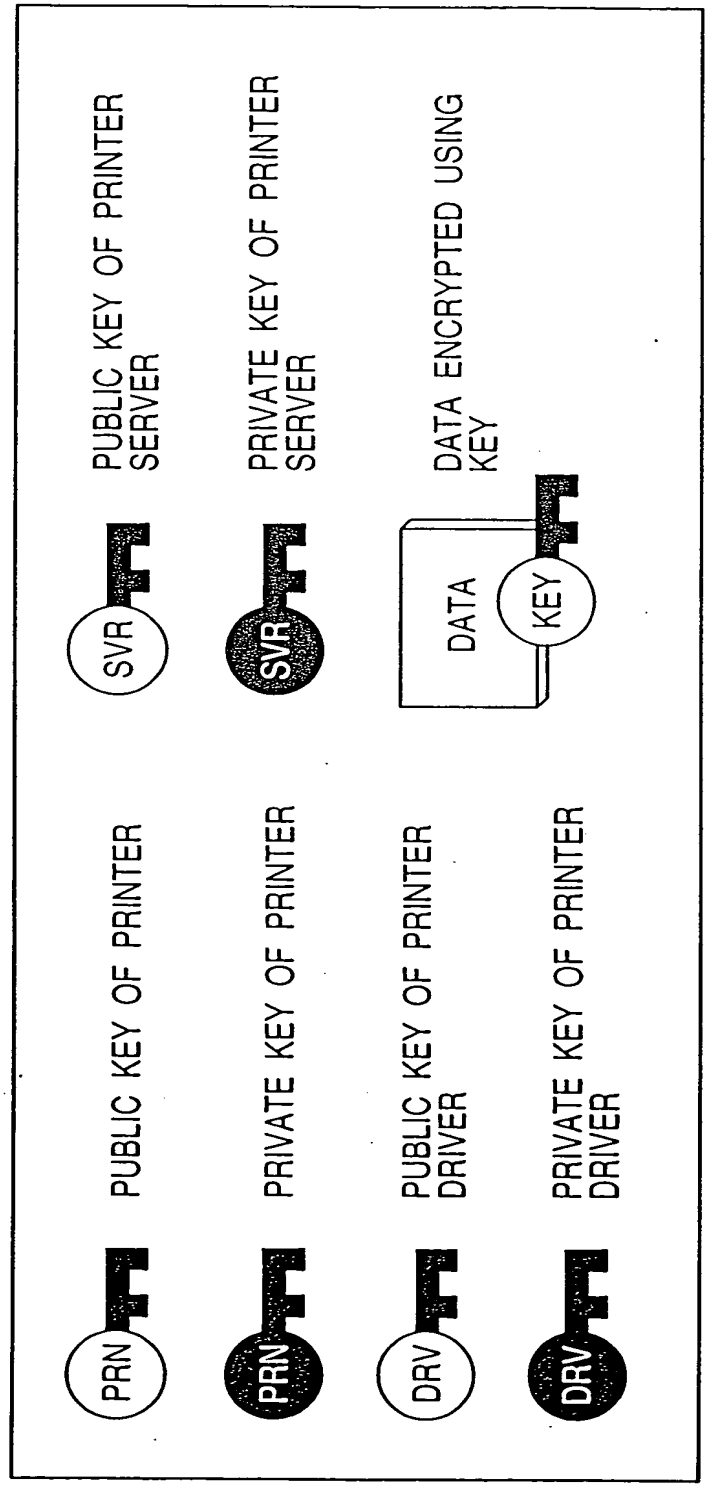

PUBLIC KEY OF PRINTER SERVER
SVR
PRIVATE KEY OF PRINTER SERVER
SVR
DATA ENCRYPTED USING KEY
DATA
KEY
PUBLIC KEY OF PRINTER
PRN
PRIVATE KEY OF PRINTER
PRN
PUBLIC KEY OF PRINTER DRIVER
DRV
PRIVATE KEY OF PRINTER DRIVER
DRV

FIG. 15

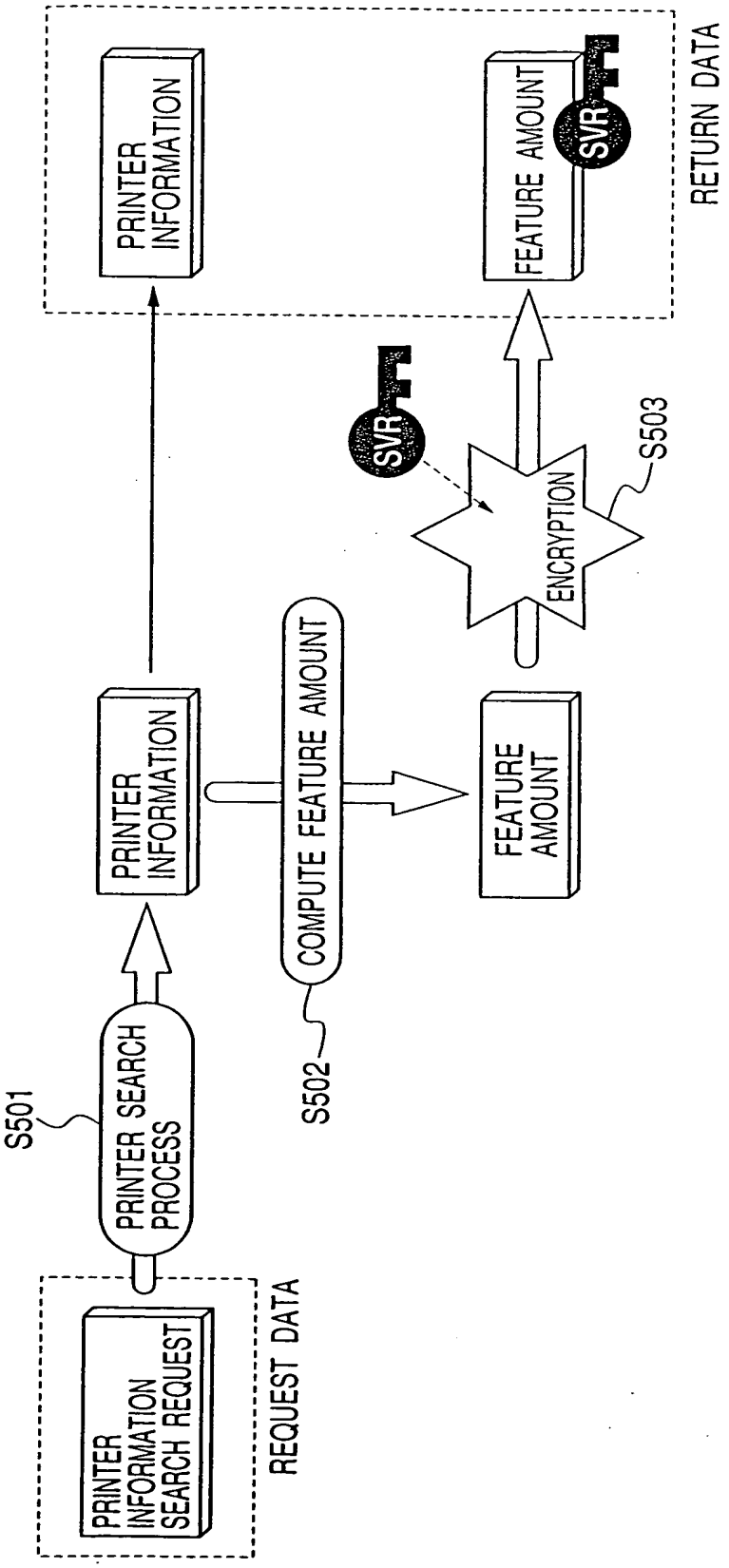

PRINTER INFORMATION SEARCH REQUEST
REQUEST DATA
S501
PRINTER SEARCH PROCESS
PRINTER INFORMATION
S502
COMPUTE FEATURE AMOUNT
FEATURE AMOUNT
SVR
S503
ENCRYPTION
SVR
PRINTER INFORMATION
FEATURE AMOUNT
RETURN DATA
PROCESS OF THE SERVER

FIG. 16

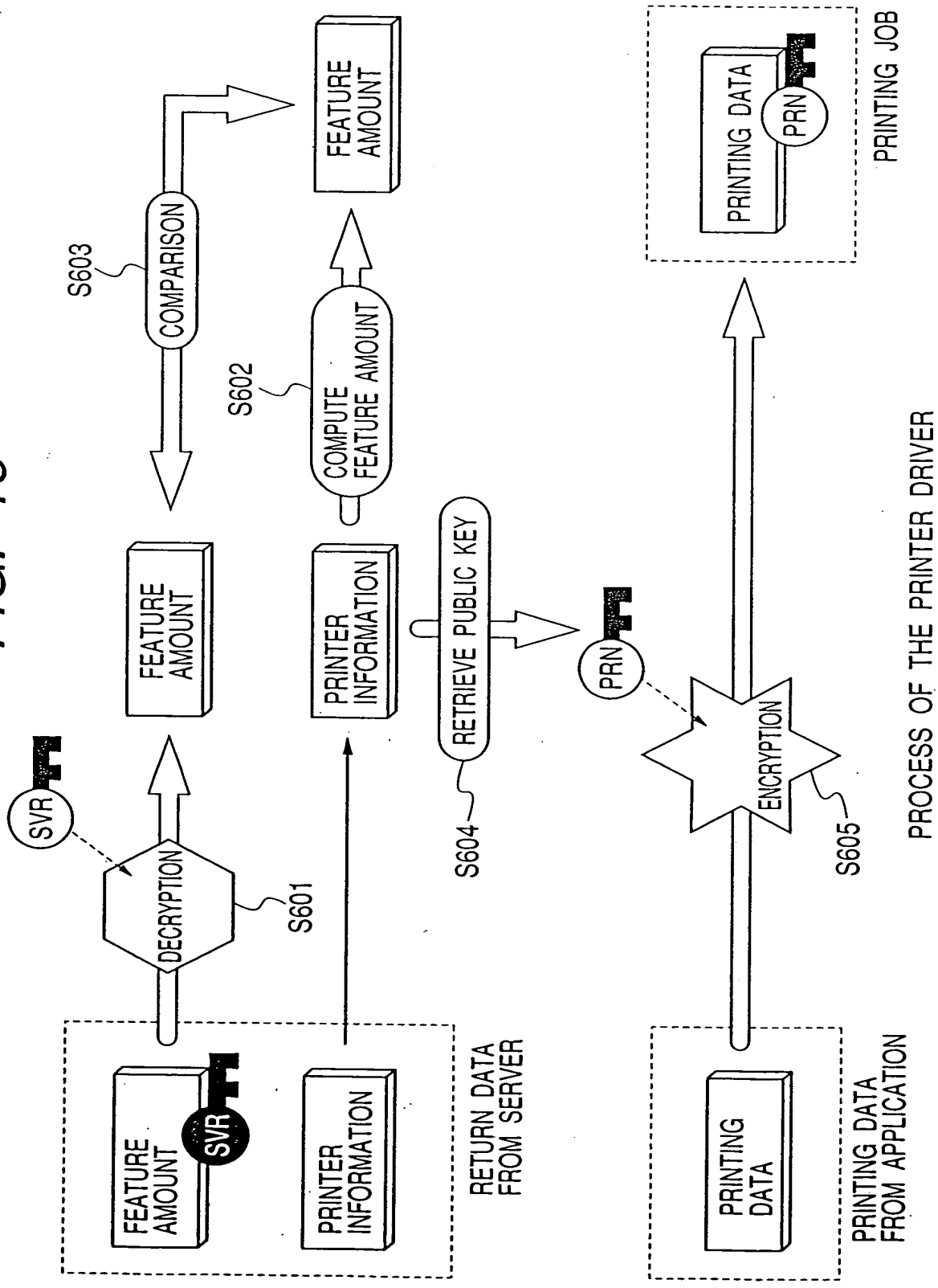

FEATURE AMOUNT
SVR
PRINTER INFORMATION
RETURN DATA FROM SERVER
DECRYPTION
S601
FEATURE AMOUNT
COMPARISON
S603
FEATURE AMOUNT
COMPUTE FEATURE AMOUNT
S602
PRINTER INFORMATION
RETRIEVE PUBLIC KEY
S604
PRN
ENCRYPTION
S605
PRINTING DATA
PRINTING DATA FROM APPLICATION
PRINTING DATA
PRN
PRINTING JOB
PROCESS OF THE PRINTER DRIVER

FIG. 17

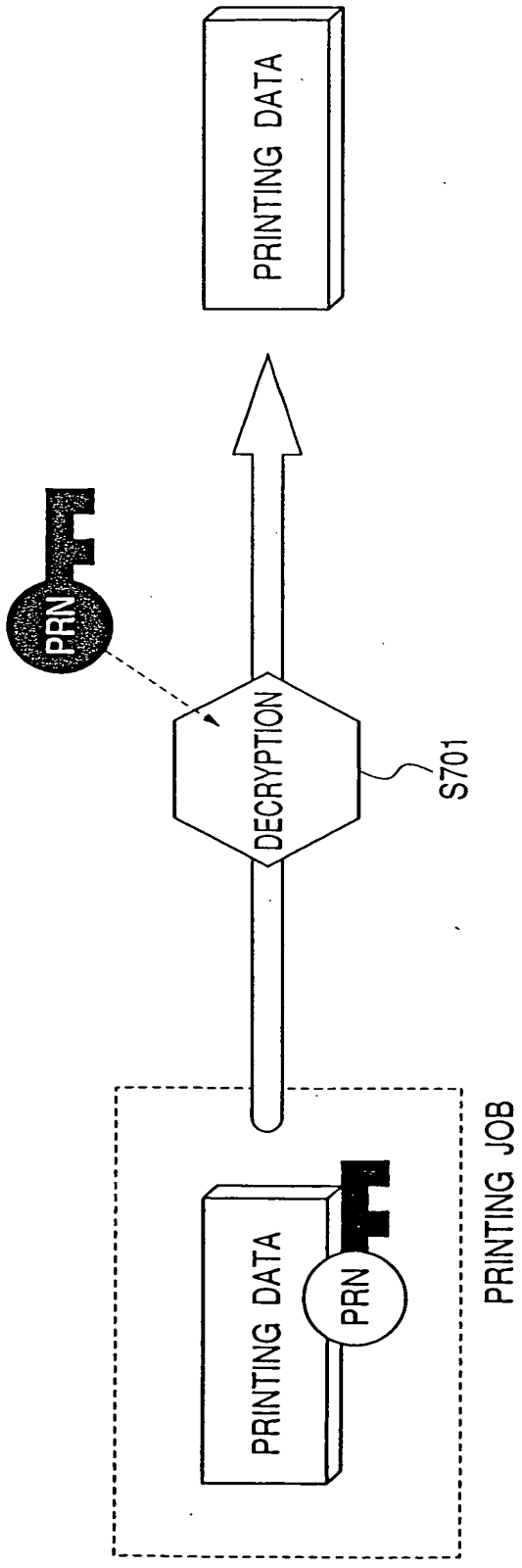

PRINTING DATA
PRN
DECRYPTION
S701
PRINTING DATA
PRN
PRINTING JOB
PROCESS OF THE PRINTER

FIG. 18

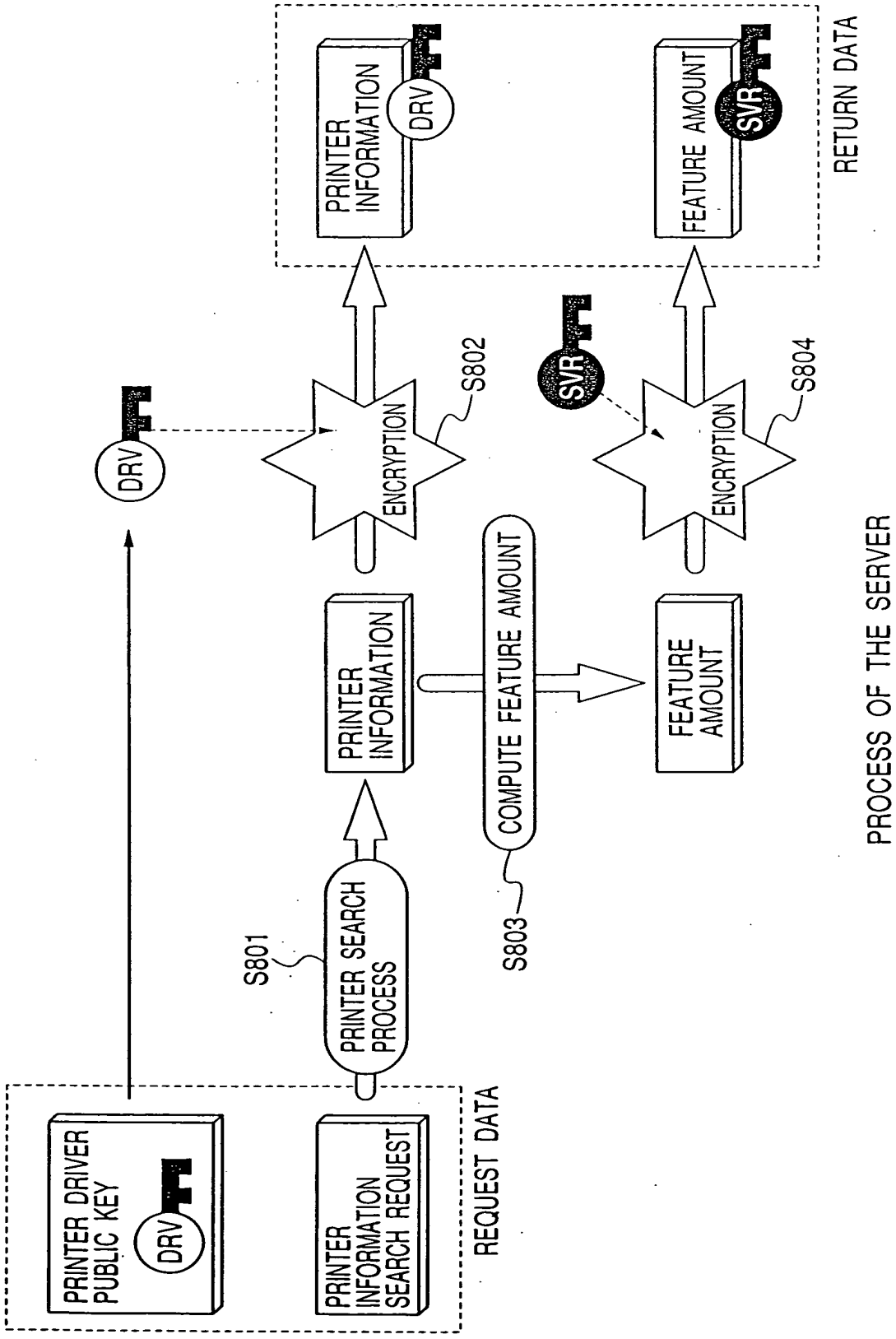

PRINTER DRIVER PUBLIC KEY
DRV
PRINTER INFORMATION SEARCH REQUEST
REQUEST DATA
S801
PRINTER SEARCH PROCESS
PRINTER INFORMATION
COMPUTE FEATURE AMOUNT
S803
FEATURE AMOUNT
DRV
ENCRYPTION
S802
SVR
ENCRYPTION
S804
PRINTER INFORMATION
DRV
FEATURE AMOUNT
SVR
RETURN DATA
PROCESS OF THE SERVER

FIG. 19

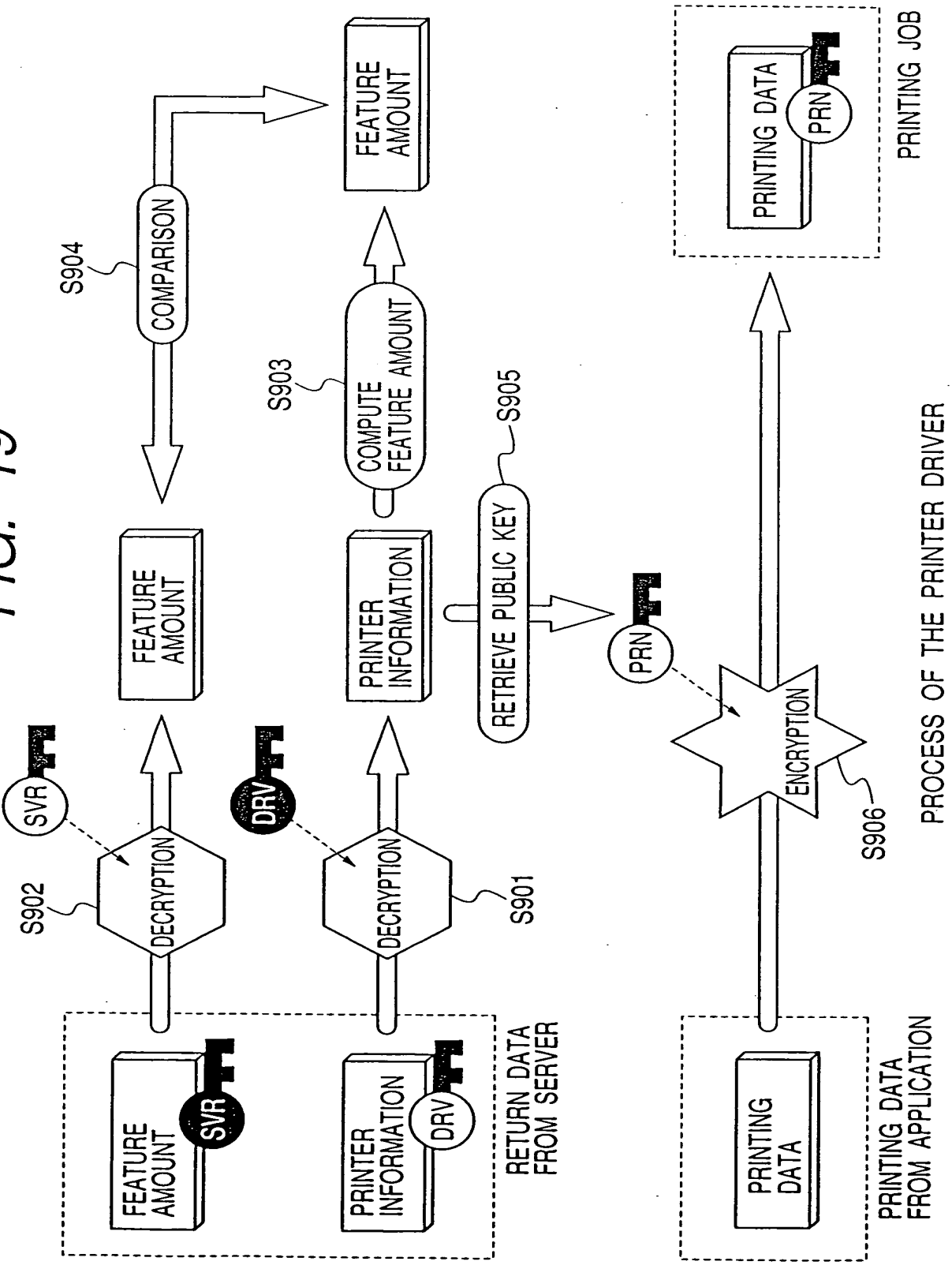
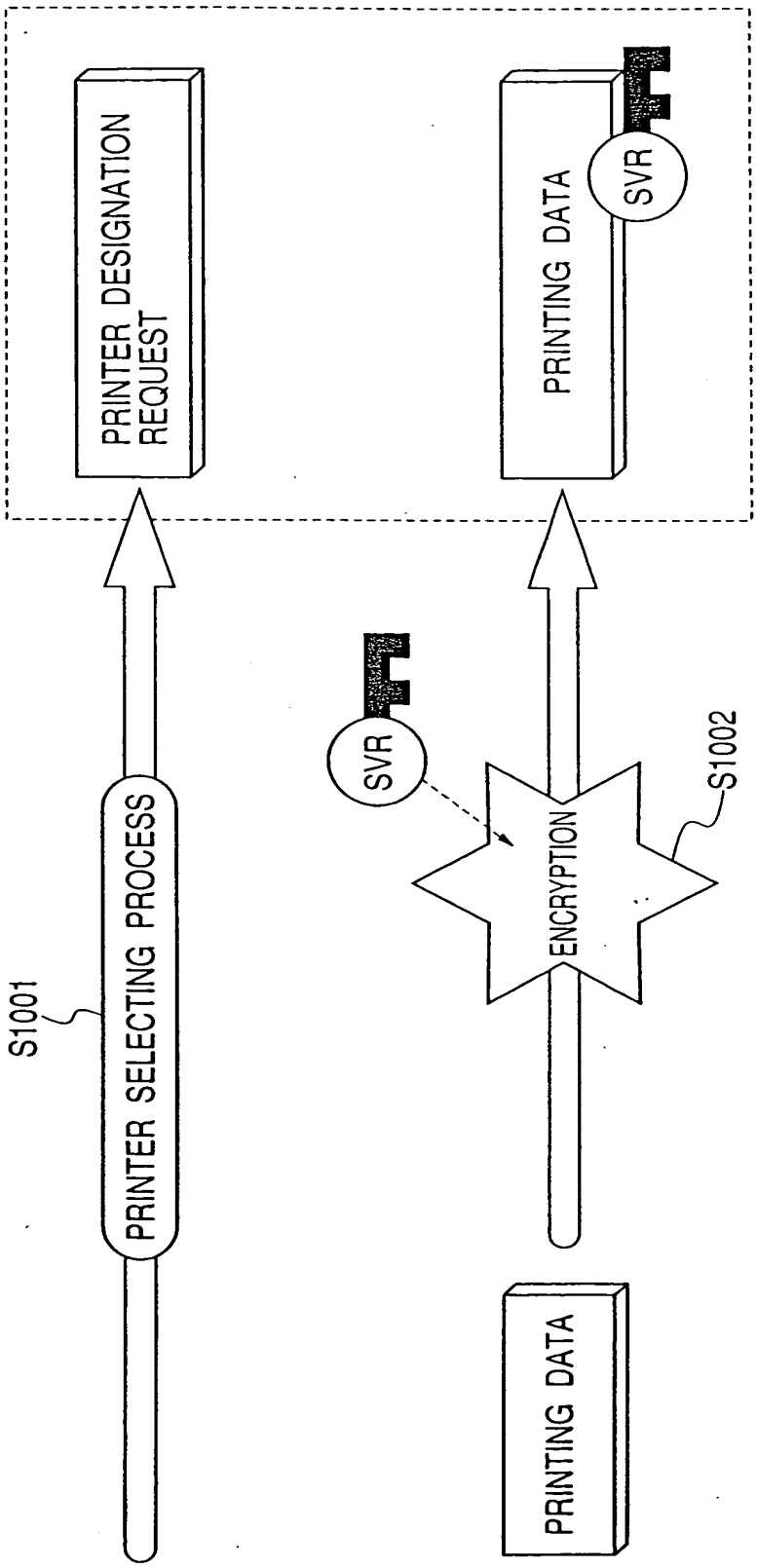

FEATURE AMOUNT
SVR
DECRYPTION
S902
PRINTER INFORMATION
DRV
DECRYPTION
S901
RETURN DATA FROM SERVER
FEATURE AMOUNT
COMPARISON
S904
FEATURE AMOUNT
COMPUTE FEATURE AMOUNT
S903
PRINTER INFORMATION
RETRIEVE PUBLIC KEY
S905
PRN
ENCRYPTION
S906
PRINTING DATA
PRINTING DATA FROM APPLICATION
PRINTING DATA
PRN
PRINTING JOB
PROCESS OF THE PRINTER DRIVER

FIG. 20



PROCESS OF THE PRINTER DRIVER

FIG. 21

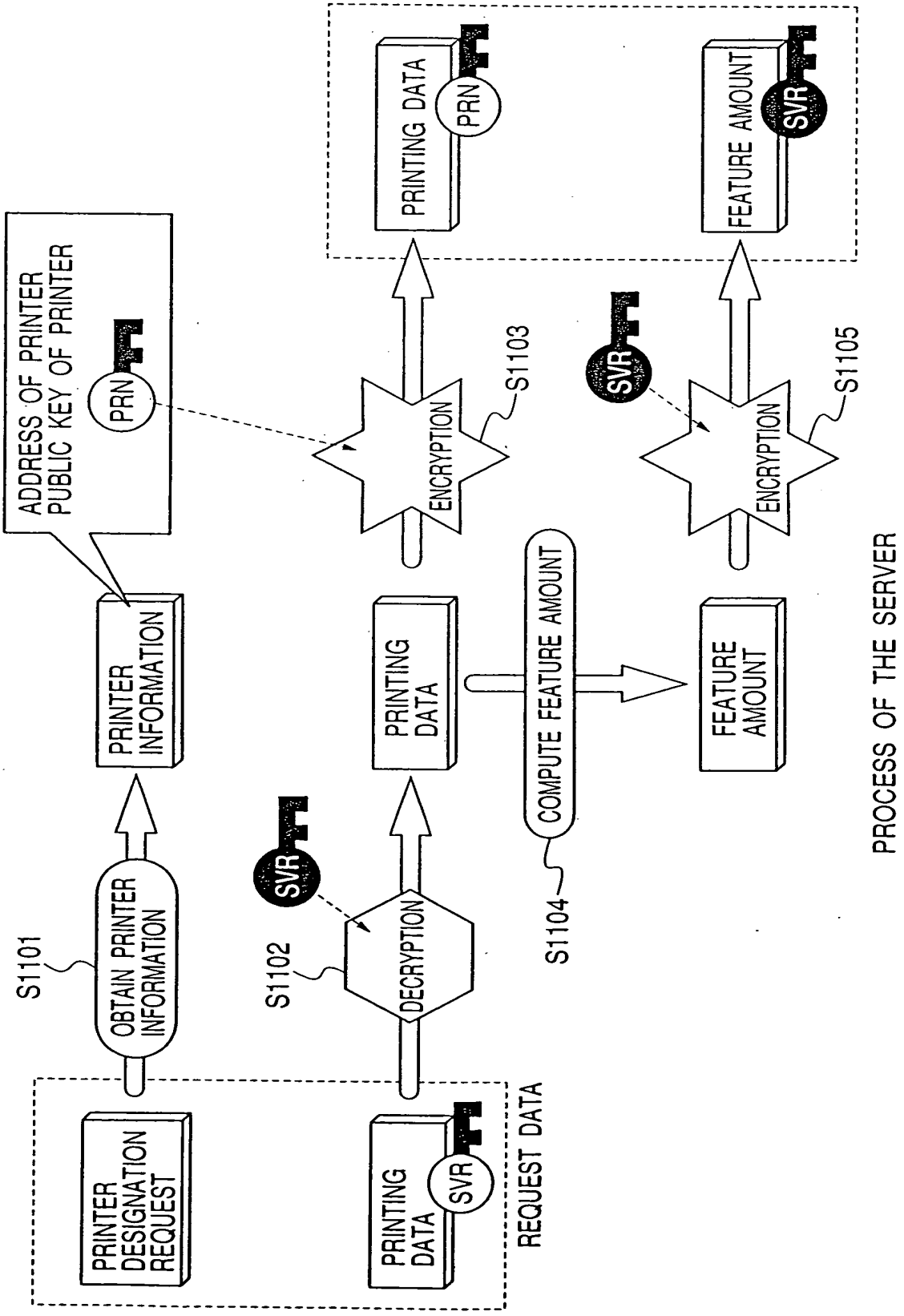

PRINTER DESIGNATION REQUEST
PRINTING DATA
SVR
REQUEST DATA
S1101
OBTAIN PRINTER INFORMATION
PRINTER INFORMATION
ADDRESS OF PRINTER
PUBLIC KEY OF PRINTER
PRN
S1102
SVR
DECRYPTION
PRINTING DATA
S1104
COMPUTE FEATURE AMOUNT
FEATURE AMOUNT
SVR
S1105
ENCRYPTION
PRINTING DATA
PRN
S1103
ENCRYPTION
FEATURE AMOUNT
SVR
PROCESS OF THE SERVER

FIG. 22

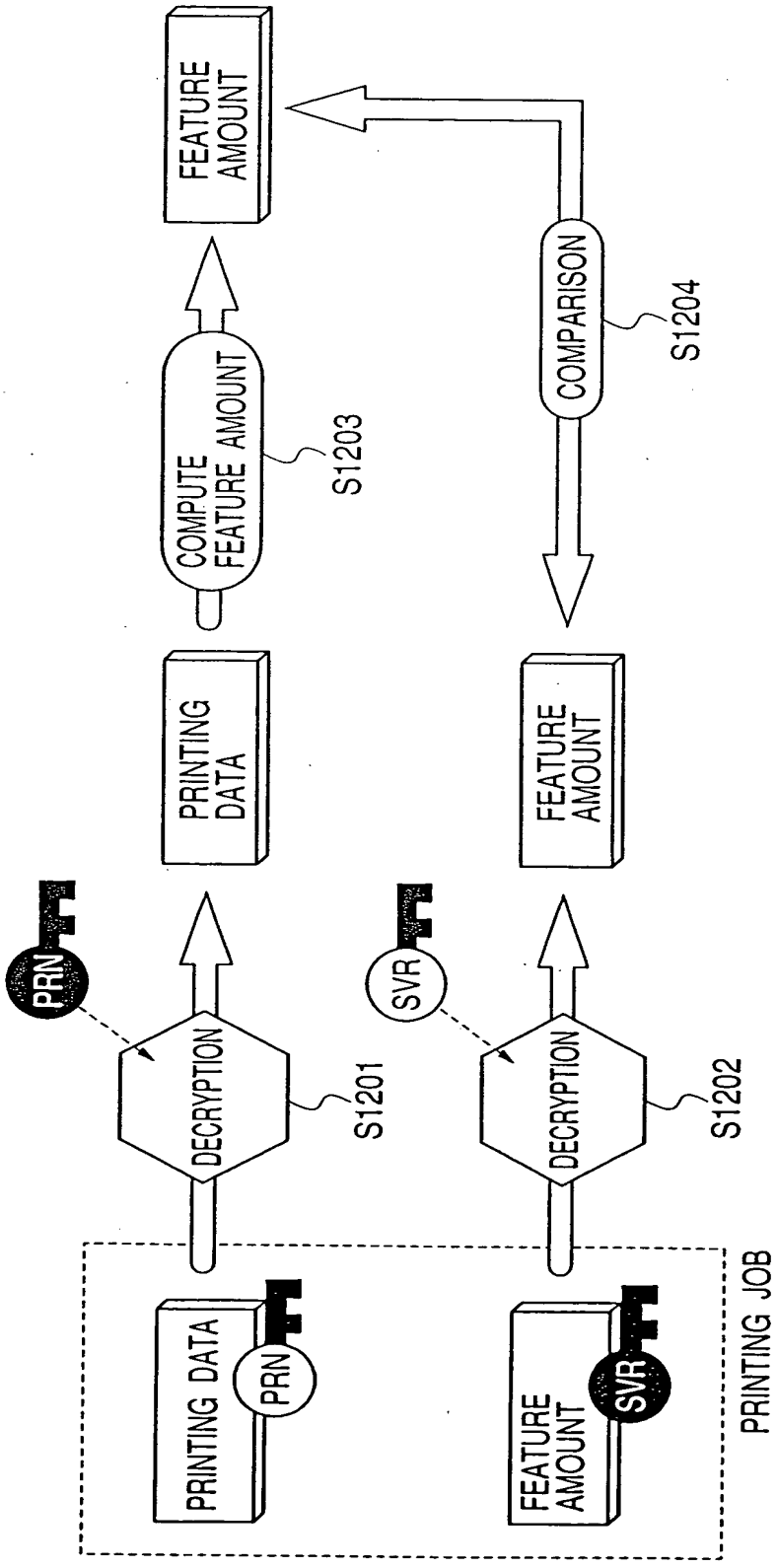
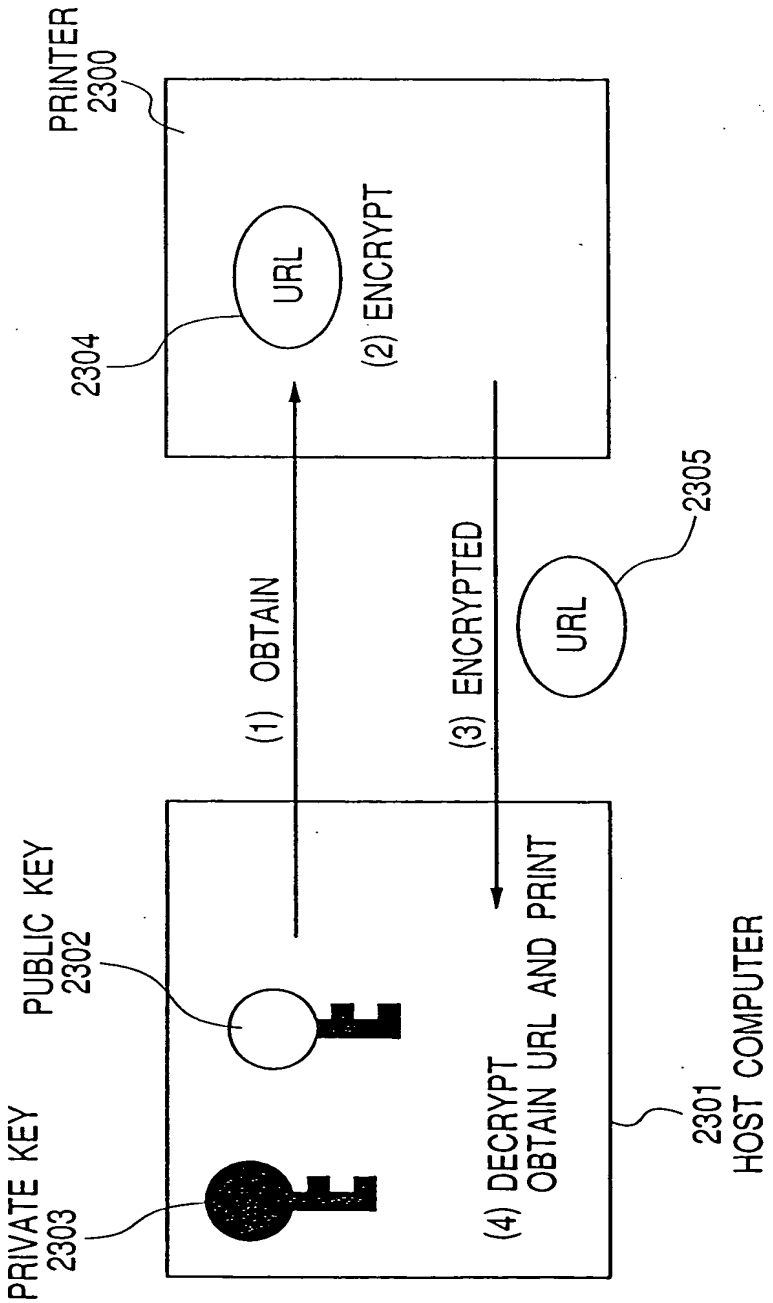

PRINTING JOB
PRINTING DATA
PRN
FEATURE AMOUNT
SVR
PRN
SVR
DECRYPTION
S1201
DECRYPTION
S1202
PRINTING DATA
FEATURE AMOUNT
COMPUTE FEATURE AMOUNT
S1203
COMPARISON
S1204
FEATURE AMOUNT
PROCESS OF THE PRINTER

FIG. 23


PRINTER
2300
URL
2304
(2) ENCRYPT
(1) OBTAIN
(3) ENCRYPTED
URL
2305
PUBLIC KEY
2302
PRIVATE KEY
2303
(4) DECRYPT
OBTAIN URL AND PRINT
2301
HOST COMPUTER